

Exhibit A Scope of Work

TECHNICAL TASK LIST

Task #	CPR	Task Name
1		Administration
2	X	Active and Low Power Research
3		Market Outreach and Information Dissemination

KEY NAME LIST

Task #	Key Personnel	Key Subcontractor(s)	Key Partner(s)
1	G.P. Li, UC Irvine	None	None
2	None	None	None
3	None	None	None
4	None	None	None

GLOSSARY

Specific terms and acronyms used throughout this work statement are defined as follows:

Acronym	Definition
3D	Three Dimensional
AC-DC	Alternating Current to Direct Current
CPR	Critical Project Review
Energy Commission	California Energy Commission
MS	Microsoft
PAC	Project Advisory Committee
PC	Personal Computer
PIER	Public Interest Energy Research
Title 20	Title 20 Appliance Standards
Title 24	Title 24 Building Code
UC Irvine	The Regents of the University of California, Irvine
UCC.1	Uniform Commercial Code (Financing Statement)
VOIP	Voice Over Internet Protocol
Wi-Fi	Wireless Fidelity

Purpose

The purposes of this contract are to: conduct plug load research that will facilitate and accelerate the development of energy efficient plug load devices and provide the foundation for future appliance standards (Title 20); provide technical support for the development of appliance and building standards; and perform outreach and information dissemination activities.

Plug loads are devices that plug into electrical outlets (as opposed to being hard-wired), are not traditional appliances and contain internal or external alternating current to direct current (AC-DC) power supplies. Energy use in the residential and commercial sectors in California for plug loads is one of the fastest growing energy loads, contributing about 15 percent of residential and commercial electrical use. This use could double by 2030. If plug load energy use continues at this pace, it will prevent achieving the state's net zero energy building goals.

Under this Agreement, the Plug Load Center at the University of California, Irvine (UC Irvine) will conduct research on the most promising, innovative, early-stage research and development projects in the plug load area. The center will develop projects that target efficiency improvements in existing and future plug load devices and work with industry, utilities, and standard setting groups to accelerate implementation into the marketplace. The development and commercialization of energy efficient plug load devices will put California on the path to zero net energy buildings by 2020 for residential and 2030 for commercial.

Work Guarantee

All members of the Contractor team, including employees of the Contractor, are eligible to perform and may be assigned technical work. However, there is no guarantee that work will be required in all areas, or that every person or firm listed in this Agreement will receive work during the Agreement period. Additional people or firms may be added during the course of this Agreement, if necessary, upon approval by Energy Commission staff.

Work Authorizations

This is a "Work Authorization" Agreement. No work other than that described in Task 1 (Administration) shall be undertaken unless authorized by the California Energy Commission (Energy Commission) through a specific written document called a "Work Authorization". The Contract Manager will prepare and issue written work authorizations that define the scope of work, the schedule of deliverables, and the project budget. Final assignment of tasks and maximum payment on individual projects will be described in work authorizations signed by the Contractor and Energy Commission's Contract Manager.

To ensure the timeliness and success of all work performed under this Agreement, the Contract Manager will work closely with the Contractor to administer the Agreement, and a staff person will be assigned as a Work Authorization Manager to direct and review the work of assigned contractors on individual work assignments throughout all phases of the Agreement. Energy Commission staff will review all products and deliverables to ensure quality, consistency and compliance with Energy Commission policies.

Work Performance

The Energy Commission cannot accurately predict far into the future when work will be required under this Agreement. The need to conduct research to support Title 20 and Title 24 will depend on a number of factors, including what research is currently being conducted at the Energy Commission and elsewhere. Further, once the need for work is initiated, the work may need to proceed at a quick pace to meet the required analytical and procedural deadlines to support standards. Accordingly, the Contractor will need to be able to respond to the Energy Commission's requests for technical support on a timely basis. The Contractor shall respond to requests for work in accordance with the following pattern:

- The Energy Commission's Contract Manager shall provide reasonable notice that a significant work effort will be required and the Contractor will need to assemble an effective and trained team during that period.
- The Contractor shall return telephone calls and e-mails from the Energy Commission's Contract Manager and provide an initial response within one (1) day.
- The Contractor and all team members shall meet the agreed upon product deadlines.
- The Contractor and all team members shall meet the agreed upon event deadlines on the day, hour, and location needed.
- The Contractor shall provide quality assurance on its draft products before delivery to the Energy Commission's Work Authorization Manager.

The Contractor will be required to complete a series of specific tasks, including management and technical functions and provision of technical support services. The Contractor shall perform various activities in carrying out the tasks under this Agreement. These are not stand alone activities, but are the types of work required to perform tasks 1-3 below. All work requested via work authorization will fall within one or more of the three (3) tasks.

TASK 1.0 ADMINISTRATION

MEETINGS

Task 1.1 Attend Kick-off Meeting

The goal of this task is to establish the lines of communication and procedures for implementing this Agreement.

The Contractor shall:

- Attend a “kick-off” meeting with the Commission Contract Manager, the Contracts Officer, and a representative of the Accounting Office. The Contractor shall bring their Project Manager, Contracts Administrator, Accounting Officer, and others designated by the Commission Contract Manager to this meeting. The administrative and technical aspects of this Agreement will be discussed at the meeting. Prior to the kick-off meeting, the Commission Contract Manager will provide an agenda to all potential meeting participants.

The administrative portion of the meeting shall include, but not be limited to, the following:

- Terms and conditions of the Agreement
- CPRs (Task 1.2)

The technical portion of the meeting shall include, but not be limited to, the following:

- The Commission Contract Manager’s expectations for accomplishing tasks described in the Scope of Work;
- Progress Reports (Task 1.4)
- Technical Deliverables (Task 1.5)
- Final Report (Task 1.6)
- Establish the PAC (Task 1.8)
- PAC Meetings (Task 1.9)

The Commission Contract Manager shall designate the date and location of this meeting.

Contractor Deliverables:

- Schedule for Recruiting PAC Members

Commission Contract Manager Deliverables:

- Final Report Instructions

Task 1.2 CPR Meetings

The goal of this task is to determine if the project should continue to receive Energy Commission funding to complete this Agreement and if it should, are there any modifications that need to be made to the tasks, deliverables, schedule or budget.

CPRs provide the opportunity for frank discussions between the Energy Commission and the Contractor. CPRs generally take place at key, predetermined points in the Agreement, as determined by the Commission Contract Manager and as shown in the Technical Task List above and in the Schedule of Deliverables. However, the Commission Contract Manager may schedule additional CPRs as necessary, and, if necessary, the budget will be reallocated to cover the additional costs borne by the Contractor, but the overall contract amount will not increase.

Participants include the Commission Contract Manager and the Contractor, and may include the Commission Contracts Officer, the PIER Program Team Lead, other Energy Commission staff and Management as well as other individuals selected by the Commission Contract Manager to provide support to the Energy Commission.

The Commission Contract Manager shall:

- Determine the location, date and time of each CPR meeting with the Contractor. These meetings generally take place at the Energy Commission, but they may take place at another location.
- Send the Contractor the agenda and a list of expected participants in advance of each CPR. If applicable, the agenda shall include a discussion on both match funding and permits.
- Conduct and make a record of each CPR meeting. One of the outcomes of this meeting will be a schedule for providing the written determination described below.
- Determine whether to continue the project, and if continuing, whether or not to modify the tasks, schedule, deliverables and budget for the remainder of the Agreement, including not proceeding with one or more tasks. If the Commission Contract Manager concludes that the project needs a formal amendment or that satisfactory progress is not being made and the project needs to be ended, these conclusions will be referred to the Commission's Research, Development and Demonstration Policy Committee for its concurrence.
- Provide the Contractor with a written determination in accordance with the schedule. The written response may include a requirement for the Contractor to revise one or more deliverable(s) that were included in the CPR.

The Contractor shall:

- Prepare a CPR Report for each CPR that discusses the progress of the Agreement toward achieving its goals and objectives. This report shall include

recommendations and conclusions regarding continued work of the projects. This report shall be submitted along with any other deliverables identified in this Scope of Work. Submit these documents to the Commission Contract Manager and any other designated reviewers at least 15 working days in advance of each CPR meeting.

- Present the required information at each CPR meeting and participate in a discussion about the Agreement.

Contractor Deliverables:

- CPR Report(s)
- CPR deliverables identified in the Scope of Work

Commission Contract Manager Deliverables:

- Agenda and a List of Expected Participants
- Schedule for Written Determination
- Written Determination

Task 1.3 Final Meeting

The goal of this task is to closeout this Agreement.

The Contractor shall:

- Meet with the Energy Commission to present the findings, conclusions, and recommendations. The final meeting must be completed during the closeout of this Agreement.

This meeting will be attended by, at a minimum, the Contractor, the Commission Contracts Officer, and the Commission Contract Manager. The technical and administrative aspects of Agreement closeout will be discussed at the meeting, which may be two separate meetings at the discretion of the Commission Contract Manager.

The technical portion of the meeting shall present findings, conclusions, and recommended next steps (if any) for the Agreement. The Commission Contract Manager will determine the appropriate meeting participants.

The administrative portion of the meeting shall be a discussion with the Commission Contract Manager and the Contracts Officer about the following Agreement closeout items:

- What to do with any state-owned equipment (Options)
- Need to file UCC.1 form re: Energy Commission's interest in patented technology
- Energy Commission's request for specific "generated" data (not already provided in Agreement deliverables)

- Need to document Contractor's disclosure of "subject inventions" developed under the Agreement
 - "Surviving" Agreement provisions, such as repayment provisions and confidential deliverables
 - Final invoicing and release of retention
- Prepare a schedule for completing the closeout activities for this Agreement.

Deliverables:

- Written documentation of meeting agreements and all pertinent information
- Schedule for completing closeout activities

REPORTING

See Exhibit D, Reports/Deliverables/Records.

Task 1.4 Bi-monthly Progress Reports

The goal of this task is to periodically verify that satisfactory and continued progress is made towards achieving the research objectives of this Agreement.

The Contractor shall:

- Prepare progress reports which summarize all Agreement activities conducted by the Contractor for the reporting period, including an assessment of the ability to complete the Agreement within the current budget and any anticipated cost overruns. Each progress report is due to the Commission Contract Manager within 10 working days after the end of the reporting period. Attachment A-2, Progress Report Format, provides the recommended specifications.

Deliverables:

- Bi monthly Progress Reports

Task 1.5 Test Plans, Technical Reports and Interim Deliverables

The goal of this task is to set forth the general requirements for submitting test plans, technical reports and other interim deliverables, unless described differently in the Technical Tasks. When creating these deliverables, the Contractor shall use and follow, unless otherwise instructed in writing by the Commission Contract Manager, the latest version of the PIER Style Manual published on the Energy Commission's web site:

<http://www.energy.ca.gov/contracts/pier/contractors/index.html>

The Contractor shall:

- Unless otherwise directed in this Scope of Work, submit a draft of each deliverable listed in the Technical Tasks to the Commission Contract Manager for review and comment in accordance with the approved Schedule of Deliverables. The Commission Contract Manager will provide written comments back to the Contractor on the draft deliverable within 10 working days of receipt. Once agreement has been reached on the draft, the Contractor shall submit the final deliverable to the Commission Contract Manager. The Commission Contract Manager shall provide written approval of the final deliverable within 5 working days of receipt. Key elements from this deliverable shall be included in the Final Report for this project.

Task 1.6 Final Report

The goal of this task is to prepare a comprehensive written Final Report that describes the original purpose, approach, results and conclusions of the work done under this Agreement. The Commission Contract Manager will review and approve the Final Report. The Final Report must be completed on or before the termination date of the Agreement. When creating these deliverables, the Contractor shall use and follow, unless otherwise instructed in writing by the Commission Contract Manager, the latest version of the PIER Style Manual published on the Energy Commission's web site:

<http://www.energy.ca.gov/contracts/pier/contractors/index.html>

The Final Report shall be a public document. If the Contractor has obtained confidential status from the Energy Commission and will be preparing a confidential version of the Final Report as well, the Contractor shall perform the following subtasks for both the public and confidential versions of the Final Report.

Task 1.6.1 Final Report Outline

The Contractor shall:

- Prepare a draft outline of the Final Report.
- Submit the draft outline of Final Report to the Commission Contract Manager for review and approval. The Commission Contract Manager will provide written comments back to the Contractor on the draft outline within 10 working days of receipt. Once agreement has been reached on the draft, the Contractor shall submit the final outline to the Commission Contract Manager. The Commission Contract Manager shall provide written approval of the final outline within 5 working days of receipt.

Deliverables:

- Draft Outline of the Final Report
- Final Outline of the Final Report

Task 1.6.2 Final Report

The Contractor shall:

- Prepare the draft Final Report for this Agreement in accordance with the approved outline.
- Submit the draft Final Report to the Commission Contract Manager for review and comment. The Commission Contract Manager will provide written comments within 10 working days of receipt.

Once agreement on the draft Final Report has been reached, the Commission Contract Manager shall forward the electronic version of this report for Energy Commission internal approval. Once the approval is given, the Commission Contract Manager shall provide written approval to the Contractor within 5 working days.

- Submit one bound copy of the Final Report with the final invoice.

Deliverables:

- Draft Final Report
- Final Report

ELECTRONIC FILE FORMAT**Task 1.7 Electronic File Format**

The goal of this task is to unify the formats of electronic data and documents provided to the Energy Commission as contract deliverables. Another goal is to establish the computer platforms, operating systems and software that will be required to review and approve all software deliverables.

The Contractor shall:

- Deliver documents to the Commission Contract Manager in the following formats:
 - Data sets shall be in Microsoft (MS) Access or MS Excel file format.
 - PC-based text documents shall be in MS Word file format.
 - Documents intended for public distribution shall be in PDF file format, with the native file format provided as well.
 - Project management documents shall be in MS Project file format.
- Request exemptions to the electronic file format in writing at least 90 days before the deliverable is submitted.

Deliverables:

- A letter requesting exemption from the Electronic File Format (if applicable)

PAC

Task 1.8 Establish the PAC

The goal of this task is to create an advisory committee for this Agreement.

The PAC should be composed of diverse professionals. The number can vary depending on potential interest and time availability. The exact composition of the PAC may change as the need warrants. PAC members serve at the discretion of the Commission Contract Manager.

The PAC may be composed of qualified professionals spanning the following types of disciplines:

- Researchers knowledgeable about the project subject matter
- Members of the trades who will apply the results of the project (e.g., designers, engineers, architects, contractors, and trade representatives)
- Public Interest Market Transformation Implementers
- Product Developers relevant to project subject matter
- U.S. Department of Energy Research Manager
- Public Interest Environmental Groups
- Utility Representatives
- Members of the relevant technical society committees

The purpose of the PAC is to:

- Provide guidance in research direction. The guidance may include scope of research; research methodologies; timing; coordination with other research. The guidance may be based on:
 - technical area expertise
 - knowledge of market applications
 - linkages between the agreement work and other past, present or future research (both public and private sectors) they are aware of in a particular area.
- Review deliverables. Provide specific suggestions and recommendations for needed adjustments, refinements, or enhancement of the deliverables.
- Evaluate tangible benefits to California of this research and provide recommendations, as needed, to enhance tangible benefits.
- Provide recommendations regarding information dissemination, market pathways or commercialization strategies relevant to the research products.

The Contractor shall:

- Prepare a draft list of potential PAC members that includes name, company, physical and electronic address, and phone number and submit it to the Commission

Contract Manager at least 2 working days prior to the kick-off meeting. This list will be discussed at the kick-off meeting and a schedule for recruiting members and holding the first PAC meeting will be developed.

- Recruit PAC members and ensure that each individual understands the member obligations described above, as well as the meeting schedule outlined in Task 1.11.
- Prepare the final list of PAC members.
- Submit letters of acceptance or other comparable documentation of commitment for each PAC member.

Deliverables:

- Draft List of PAC Members
- Final List of PAC Members
- Letters of acceptance, or other comparable documentation of commitment for each PAC Member

Task 1.9 Conduct PAC Meetings

The goal of this task is for the PAC to provide strategic guidance to this project by participating in regular meetings or teleconferences.

The Contractor shall:

- Discuss the PAC meeting schedule at the kick-off meeting. The number of face-to-face meetings and teleconferences and the location of PAC meetings shall be determined in consultation with the Commission Contract Manager. This draft schedule shall be presented to the PAC members during recruiting and finalized at the first PAC meeting.
- Organize and lead PAC meetings in accordance with the schedule. Changes to the schedule must be pre-approved in writing by the Commission Contract Manager.
- Prepare PAC meeting agenda(s) with back-up materials for agenda items.
- Prepare PAC meeting summaries, including recommended resolution of major PAC issues.

Deliverables:

- Draft PAC Meeting Schedule
- Final PAC Meeting Schedule
- PAC Meeting Agenda(s) with Back-up Materials for Agenda Items
- Written PAC meeting summaries, including recommended resolution of major PAC issues

TECHNICAL TASKS

TASK 2 –ACTIVE and LOW POWER RESEARCH SUPPORT

The goal of this task is to support active power mode research.

When directed by the Energy Commission Contract Manager in work authorizations, the Contractor shall:

- Perform research and support on plug loads, to include but be not limited to: Improve efficiency of plug load devices such as power supplies, battery chargers, displays, televisions (including three dimensional (3D)), computers, TIVO players, Wireless Fidelity (Wi-Fi), and cameras.
- Provide technical support for the development of appliance (Title 20) and building (Title 24) standards.
- Perform low power mode research, to include but not be limited to: Improve enabling features of items such as consumer and office electronic equipment, power management software, improved power strips, set top boxes, gaming consoles, and inter-device control.
- Building Networks (For example: Home Area Networks, demand response) Building Networks are equipment that enables arbitrary communication between any two or more plug load devices in a space / building.
- Improve efficiency of routers, switches, ethernet, android technology for control of equipment, wireless controls, voice over internet (VOIP), and proxy technology.

Deliverables: To be determined

TASK 3 – MARKET OUTREACH and INFORMATION DISSEMINATION

The goal of this task is to have a direct link to the market, either through utilities or the electronics industry.

When directed by the Energy Commission Contract Manager in work authorizations, the Contractor shall:

- Demonstrate and publicize ways various types of end users can manage plug loads based on the results of research. This may include sharing ways consumers can know what the energy draw is on plug loads (visually).
- Establish partnerships with industry and coordinate what is needed to realize the benefits of more efficient plug loads.
- Work with industry partners to develop new technology in support of Title 20/24 standards.

- Provide education and training to consumers. The center will have a strong connection with utilities and the Energy Commission's Efficiency Division-Appliance Standards staff. These entities will use research results as the basis to justify the need for future Title 20 appliance standards and for incentives/rebates.
- Hold workshops to present research ideas and findings by students, professors, industry and Commission staff.
- Prepare and disseminate research results through printed material, websites, newsletters or through conferences.

Deliverables: To be determined